MADRAS HEALTH EDUCATION

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OUR HOMAGE

[The nation mourns the sudden passing of her most beloved son Pandit Jawaharlal Nehru. The authentic voice that spoke for freedom, peace and prosperity of the world, was stilled. We must and will bear with courage and resoluteness the tragic loss we have suffered. We can pay no more tribute to his memory than to work for the ideals he cherished. The following is the text of President Radhakrishnan's message, on the eve of departing of our leader.—Editor.]

" In a moment so charged with emotion, I do not wish to say much ; nor is there any need for it. It is an occasion when every one of us man, woman and child, wish to keep our thoughts to ourselves and render in a mood of reverence grateful homage to a life of great service and dedication."

" Jawaharlal Nehru was one of the greatest figures of our generation, an outstanding statesman whose services to the cause of human freedom are unforgettable. As a fighter for freedom he was illustrious, as a maker of modern India his services were unparalleled. His life and work have had a profound influence on our mental make-up, social structure and intellectual development. It will be difficult to reconcile ourselves to the image of India without Nehru's active and all-pervasive leadership. An epoch in our country's history has come to a close."

Sensitivity of Mind

" As a man, Nehru combined a fine sensitivity of mind, a rare delicacy of feeling, with large and generous impulses. To the weak and the frustrated his heart went out in profound

sympathy. He was an author of distinction. His autobiography which tells the story of his life and struggle without a touch of self-pity or moral superiority, is one of the most remarkable books of our time."

"Nehru held the office of the Prime Minister of our country ever since the dawn of independence ; and in the long years of his Premiership tried to put our country on a progressive, scientific, dynamic and non-communal basis. His steadfast loyalty to certain fundamental principles of liberalism gave direction to our thought and life. We can understand the endless surprises of his attitudes and actions ; all these fall into their actions ; all these fall into their place if we remember his faith in democracy and freedom. He used the existing social and political institutions and breathed into them a new spirit—" a new vitality."

"Nehru by his series of public utterances, educated our people to an appreciation of the values he had cherished. He fought for a high level of human life and burnt his ideals into the understanding of the common people. By his own powerful and vibrant voice, which we will not hear any more, he created, moulded, inspired and kindled a whole generation of Indians, to a loyalty to the first principles which he held so dear. It is not enough to have great ideals. We have to work for their achievement. Time is the essence of the situation and Nehru had a great regard for the sanctity of time. The pitiless exactions of time take no denial and so the great leader has fallen."

"Though nurtured in a life of sheltered ease and comfort, he threw himself into the national struggle and became a great leader second only to Gandhi. The part that he played in the national struggle and in the final settlement of the India question in 1947 is a part of recent Indian history."

" Nehru realised even before the advent of freedom that our economic regeneration, our progressive modern lives cannot be achieved, unless there is concerted planning. After the transfer of power, as the Chairman of the Planning Commission it was he, that gave dynamism and power to the various plans which are now being implemented."

Challenges

" The path of Nehru as a nation builder in the early years of India's freedom was beset with fantastic difficulties and formidable challenges. The partition of the country resulting in the exodus of millions of people from one part of the sub-continent to the other, amidst scenes of appalling riot, loot and arson brought in its wake problems-political and economic, which defied easy solution. We have outbreaks of communal violence here and there in our country even now. This must have seemed to Nehru a terrific disillusionment of his great work, inherited from Gandhi and developed by himself."

International outlook

" Nehru always had a conviction that India cannot be viewed in isolation from other States of the world. Even before the advent of freedom, he was pleading that the Indian question was a part of the large movement of the appressed people, fighting against colonialism. He had a love of liberty, not merely for his own people, but for all people of the world. He, therefore, expressed sympathy and support for all liberation movements in Africa, Asia and South America. He believed in the liberty of all without distinction of class, creed or country."

Voice of Peace

" Nehru was a great believer in world peace and the concept of one world community. No one had shown greater faith and allegiance to the Charter of the United

Nations than Nehru. He realised that in a thermo-nuclear age, war would mean the extinction of civilised values. That is why he was convinced that the true role of a statesman in this distracted world lay in lessening tensions and conflicts and bringing about a climate of understanding and mutual accommodation, with a view to settlement of international differences without resort to the horrors of war. On several international questions such as Korea, Laos, Congo, and Viet Nam, his was the voice of peace and friendship and his voice was always heard with respect.

" His courage, wisdom and personality has held this country together. It is these qualities which should be chershed, if we are to hold on. Our thoughts to-day go out to him as a great emancipator of the human race, one who has given all his life and energy to the freeing of men's minds from political bondage, economic slavery, social oppression and cultural stagnation.

" Those of us who are left behind to mourn his loss could do no better than work for the ideals he cherished. That is the best tribute we can pay to our departed leader ".

(**Radio Talk**)

"NO TRUCE FOR TUBERCULOSIS"

DR. M. G. CANDAU,
[*Director-General, World Health Organization.*]

At least 15 million people suffer from infectious tuberculosis in the world to-day. The disease still claims more than 3 million lives each year; and these are cautious estimates of the situation.

It is true that there has been a spectacular decline in tuberculosis deaths in nearly all economically-developed countries. Between 1950 and 1960, the tuberculosis death rate fell from about 14 to nearly 2 per 100,000 population in the Netherlands, from nearly 21 to well below 6 in the U.S.A., from more than 47 to less than 20 in France, and from 122 to 31 in Japan, to mention only a few examples.

Unfortunately the number of tuberculosis sufferers has not declined nearly as rapidly as the number of deaths, and tuberculosis still remains a grave problem even in the more-favoured countries. In the world as a whole, it can be estimated that between 2 and 3 million new cases still occur each year.

In the less-developed areas of the world, morbidity statistics are not so reliable, but special surveys have indicated that one person in every hundred may suffer from infectious tuberculosis. Even more serious, up to 70 per cent of children may be infected before they reach the age of 14.

In India

In India alone, for instance, there may be as many as 3 million infectious cases. In Latin America there are 600,000 known cases of active tuberculosis and probably 1,800,000 undeclared ones.

The most recent World Health Organisation Expert Committee on Tuberculosis laid down a criterion by which a country could judge its progress towards the conquest of tuberculosis. The Committee felt that tuberculosis could not be considered to be eliminated as a public health problem unless the number of children who became infected before the age of 14 fell below one per cent.

Not a single country in the world to-day satisfies this condition. Yet for the first time in man's history we now possess effective weapons with which to fight tuberculosis. This is why the theme for World Health Day this year is "No Truce for Tuberculosis".

B.C.G. Vaccination

Vaccination with BCG can protect large segments of any population from the risks of infection to which it is exposed by the tuberculosis sufferers in its midst. Treatment with the modern drugs-isoniazid, streptomycin and p-aminosalicylic acid (PAS) can render patients non-infectious and cure the disease. This is possible even in countries where the number of sufferers is a thousand times greater than the number of sanatorium beds, and where treatment has to be given while patients go on living at home.

These weapons are both powerful and relatively cheap, but they must be properly used. If BCG vaccination is fully to serve its purpose, it must be given to a high proportion of young people before they are exposed to any serious risk of infection. Drug treatment can succeed in reducing the tuberculosis problem only if the majority of infectious cases are detected before they spread the disease, and if those under treatment actually take their pills regularly. Most important therefore is the efficient organization of community-wide services adapted to each country's particular situation. This means that doctors and auxiliary workers of all kinds must be given the right training.

The discrepancy between what could be achieved with the knowledge and tools available to-day and what is actually being done is both a national and international challenge.

Bodies, like World Health Organization, UNICEF, and the International Union against Tuberculosis are ready to face the challenge, but the main effort must come from within the countries themselves. It is the duty of every national health service to take advantage of all possibilities and join a world-wide drive to conquer this scourge which continues to kill millions each year and is a drag on economic progress by weakening and immobilizing tens of millions.

SOME FACTS ABOUT TUBERCULOSIS

A conservative estimate of to-day's global tuberculosis problem made by WHO experts is as follows: a pool of 10-15 million infectious cases; which is augmented each year by 2-3 million new cases and depleted by 1-2 million deaths together with an unknown number of spontaneous and induced cures. In some developing countries more than 70 per cent of children are infected at the age of 14 years, as against less than two per cent in certain economically more favoured countries.

Hospital versus Home Treatment

In the less-developed countries, to treat a patient in hospital costs anything from ten to twenty miles as much as treating a patient at home, that is to say, if you admit a patient to hospital for three to four weeks, it is equivalent to giving that patient good treatment at home for a whole year. In India alone, with its 5,000,000 tuberculosis patients, if it were decided to hospitalize all the infectious cases only, the number of beds required would be about 1,000,000 against a total of 26,500 now available.

Powerful Drugs

The new anti-tuberculosis drugs have had a profound effect on the number of deaths from the disease. According to figures from 26 different countries, the average tuberculosis death rate were dropped 3 to 4 per cent each year up to 1947. Since the discovery of streptomycin in that year until 1951, the average yearly drop was between 7 to 17 per cent. In 1952 when isoniazid began to be used, there was a decrease of 27 per cent compared with deaths in 1951.

Fresh Air with a vengence

In the last decades of the 19th Century, the terraces of the sanatoria were packed with patients. They were at first made to take the outdoor treatment whatever the weather.

Wide-open windows and cure on outside balconies were the order, bleak and cold as the day or night might be. The art of wrapping oneself in blankets became an essential part of the cure, almost a ritual. Like any new drug, fresh air was taken with a vengeance. Nowadays, eves for the consumptive, the heroic days are over. Sanatorium life where it still exists has become softer and more people are cured.

Tuberculosis not yet conquered

Comparing the situation in 23 European countries, the death rate from respiratory tuberculosis in the six with the highest rates was between 22 and 44 compared with a range of between 3 and 8 per 100,000 among the six with the lowest rates during 1959. The annual incidence of new cases of respiratory tuberculosis found to require treatment during 1960 varied from about 40 to about 270 per 100,000 of the population is, after all, to supervise him and make sure that he takes the medicine at his home or at the health centre. If, instead of daily, drug treatment could be given intermittently, e.g., once a week, medication could be supervised even in developing countries. The Madras Chemotherapy Centre has been investigating this possibility: twice-weekly ambulatory treatment with isoniazid and streptomycin gave the same spectacular results as daily administration of isoniazid and PAS: more than 90 per cent of advanced cases cured. Stimulated by these unexpected and encouraging findings, the Centre has begun to study the feasibility of a once-weekly regimen.

Applicability on a mass scale, economy, convenience, and reduced toxicity: these are the truly impressive array of advantages offered by the latest "break-through" in the treatment of a disease that has plaugued mankind since the beginning of history.

NEW STRATEGY AGAINST TUBERCULOSIS

A debate on outstanding questions in tuberculosis control was organised by " T ", the quarterly review published by the International Union against Tuberculosis. The participants included Dr. Wallace Fox, Medical Research Council, London, Professor John Crofton, Edinburgh Hospital; Dr. P. V. Benjamin, Adviser to the Government of India: and Prof. Etienne Bernard, Union Laenne Hospital, Paris. The following are excerpts from the debate as published.

Dr. Fox.—I believe that the primary need for these (developing) countries is to have enough drugs for all patients and to see that the patients take the drugs for a long enough period of time. This is really the broad target of chemotherapy everywhere, and I would add to that the ability to select the right drug combination for the patient.

As regards the problem of hospital versus ambulatory treatment, I think it should be approached primarily as an economic problem. To treat a patient in hospital costs anything from ten to twenty times as much as treating a patient at home that is to say, if you admit a patient to hospital for three to four weeks, it is equivalent to giving that patient good treatment at home for a whole year.

When one is working in a developing country, one has to look at the total budget and decide how it can most profitably be spent, and I believe the answer to this is to concentrate on ambulatory chemotherapy and keep the hospital beds for medical emergencies for which hospital admission is absolutely essential. One of the really essential tasks now is to educate the politicians and then the general public to the fact that tuberculosis can be cured at home if the patient takes his drugs for a long enough period of time.

If we could only teach the authorities that their job is not to provide hospital beds and magnificent clinics but that their real responsibility is to see that there are enough drugs and then get the patients to come forward and take those drugs for a sufficiently long period. then I am convinced that something can be done about tuberculosis. But as long as it is felt that treatment must be based primarily, or even initially, on hospitals, there can only be delay in tackling the problem in the community.

Prof. Crofton.—Don't you think, Dr. Fox, that we are coming to a stage where there is room for operational research in this field, where we should select areas which are comparable in certain respects, and perhaps decide a budget for each area, and then, within this similar budget, try different techniques of this kind and see which, in practice, gives the best results? These results may differ in different parts of the world . . . . You yourself and your group have accomplished this wonderful task in trying to determine the best forms of standard treatment, and you have shown that ambulatory treatment can be highly successful. We now want to extend this from a specially selected group to community as a whole.

Dr. Benjamin.—The Madras Chemotheraphy Centre has definitely proved that we can get as good results by home treatment, provided the drug is taken in sufficient doses and for a sufficiently long period. I would like very much to believe in hospitalization, but I am not personally convinced that three or four weeks' hospitalization can materially affect the result of home treatment. As for the idea of educating the patient by hospitalizing him, it is a vestige of our old idea that hospitalization is essential for the treatment of tuberculosis. That is what I feel about it. I do not think it is going to have any real influence on the teaching of the patient. The teaching of the patient is necessary. It can be done in the home or in the out-patient department.

With regard to research in Madras Fox and the others have done an admirable job. They proved to our amazement that domiciliary treatment is as good as hospital treatment. Nobody can question it. They have produced absolutely reliable and convincing data, but whether you can repeat the same thing in different conditions, is being studied in our work at Madanapalle and Bangalore. In Madanapalle we are visiting the patients only twice a month and handing them the drugs, and we find that the number of persons following the treatment is only 70 per cent instead of the 85 per cent to 90 per cent in Madras. Now in Bangalore we are trying out different projects, and there we find that if we leave the patient to himself for a month and do not visit him, the results are not very encouraging . But as soon as the local public health authorities take charge of the patients, they immediately show signs of improvement.

I started by saying that if you have 60 per cent of the people getting better with an improvised way of treating, then it is worth doing. In a developing country where you have to deal with millions of patients, we have to improvise methods. I agree completely with Prof. Crofton that we ought to have operational research. and I can tell you that we are trying to have it in Madras, Bangalore and Madanapalle, and probably three or four years from now he shall be able to give some results.

Dr. Fox.—I should like to return to the question that the hospital educates. I know of no publication which shows that hospitalizing a tuberculosis patient succeeds in educating him. There are several publications showing entirely the contrary. There is the Madras experience which showed that, even after a year of indoctrination in a sanatorium, patients were irregular in taking their medicaments in the second and third year. There is the experience of Lunts and Austin in Birmingham. There is the experience of Rigby in London as

well as of Gordon in Tanganyika, an advocate of hospital admission in order to indoctrinate the patient but who still has a considerable degree of irregularity when his patients were taking PAS and Isoniazid after being discharged from hospital. There is thus no evidence that that is the best way to indoctrinate the patient. I personally believe that the best way to indoctrinate the patient is to treat him at home in the bosom of his family and indoctrine the whole family. If you do this, you will meet with greater success than if you isolate the patient in the very artificial conditions which exist in hospital.

Considering Prof. Crofton's point about operational research I would entirely agree with this. What I believe is very important is to discover how to apply to whole communities the weapons which we have. If I personally had to do this, I would not begin by introducing the hospital into the picture. I would begin by trying the cheapest and most simple variations at home.

Prof. Bernard.—I think we must come back once again to the medical and clinical point of view and that we must distinguish between the cases. I think that, in cases with advanced, cavitary disease, initial treatment in hospital where, in addition to the taking of the drugs, being supervised the patient has to rest, is desirable.

Prof. Crofton.—It is just this type of advanced case which was admitted into the controlled trials in Madras, and the patients with this type of lesion treated at home admittedly under good supervision by highly trained team, did just as well as the patients who were treated for one year in hospital. I would have the same prejudice as Prof. Bernard and in my own country I pursue exactly the same policy as Prof. Bernard but I do not think one can contradict the evidence of Madras.

If you can provide adequate home supervision of the quality that Dr. Fox provided, you can get just as good results in the patient's home even under very bad slum conditions

with malnourished patients. But, of course, we are speaking about two different milieux. I agree with Prof. Bernard for various reasons with his policy in France or in Scotland, but I agree with Dr. Fox for his policy in India.

Dr. Fox.—I would just like to add a word or two about Madras. When I first arrived in Madras and saw the appalling living conditions and the undernourished state of the patients, the climate, their occupations and their homes, and then when I saw the types of disease they had and the exceeding poor physical condition in which they first attended clinics, I had the very gravest doubts as to whether chemotherapy could materially influence the course of the disease . . . To my amazement—and nobody was more surprised than myself the results in Madras turned out as they did.

I would add that we were not just dealng with patients with advanced diseases and extensive, lesions, we were dealing with ill, very ill and often desperately ill patients, patients who could hardly stand. I think it is worth emphasizing that I don't think it would be possible to accumulate a more severally ill group of patients than those we had.

Dr. Tucker.—May I return to a supposedly well-developed country such as the United States with regard to this question of hospitalization and refer to a very interesting talk which I heard given at a meeting of the Washington Tuberculosis Association not long ago. This lecture was given by a social Psychologist. He was a graduate student in sociology when he came down with tuberculosis himself. He recovered and beame increasingly interested in the problems confronting the patient, like himself, in the task of acquiring a cure. He went on with his graduate work leading to a doctorate degree by serving for a time as an orderly or aid in a tuberculosis hospital, where he systematically, explored the reactions of tuberculosis patients to doctors, their prescriptions and the

entire routine of such a hospital. From this rather specialised experience, he made some very provocative remarks to our audience.

He pointed out that the doctor's approach to the cure of the patient, whatever the disease, is a authoritarian one, and that the doctor's advice, given with the best of intentions, and in the best of interests of the patient, is nearly always in conflict with what the needs of that patient are, particularly in the case of tuberculosis. If hospitalization is recommended, it means almost a complete disruption of a normal life, whether it be a man or a woman. Not only does it mean leaving one's family, one's job, altering the income of the family situation, but it means entering upon a regimented life, where the details of normal living are altered almost completely.

And it is understandable, said this speaker—Dr. Julius Ross—that there should be considerable resentment on the part of the patient to the recommendations of the physician. He said that, of course, it was possible for the good physician to explain the reasons for all this if he himself has enough confidence in those reasons, and if the patient is the docile type he will accept them with little question. But in actual fact, many individuals never completely accept these recommendations and only gradually is there a compromise between the physician and patient whereby the physician relaxes his requirements and the patient adjusts his own personal living habits to a certain extent in order to co-operate with the physican.

I think it is incumbent on us physicians, even in such countries as mine, to consider very carefully the extent to which we are justified in recommending hospitalization for tuberculosis.

Now this is only one aspect; of course, there are others: the aspect of infectiousness and the public health problem for example. But this was also carefully studied in Madras, and

the results of that study are extremely intriguing. I have talked about this recently with some of my associates in the United States. I don't know the answer, but I do think it is incumbent upon all of us to re-examine our own practices in the light of some of the newer developments.

Prof. Bernard.—I should like to come back to a point just referred to by Dr. Tucker. Statistics have shown that there is a very much higher rate of infection of the members of the family, particularly of the children, when patients are treated at home, than when patients are treated in hospital or sanatorium. I think that this is an important point, and one which should not be overlooked.

On the other hand, I know from experience, that each time I have allowed a patient to be treated at home, I have always without exception, had occasion to regret it—they did not keep to the treatment, they went out despite my having told them not to, they stopped taking their drugs when they should not have. In practice, it is difficult to carry out treatment at home.

Believe me, I very much admire the work of Dr. Fox, " the Madras trial ". I would compare it to a laboratory experiment, carried out with all the precision, attention to detail and strict supervision of a laboratory experiment. But when it comes to actual practice, things are different. One has to deal with the psychology and fallings of human beings, and that is one of the reasons why I stick to my belief : initial hospital treatment for all cases of advance pulmonary tuberculosis.

Dr. Fox.—I entirely agree that hospitalization does present the problems to which Dr. Tucker referred to. This is why hospitalized patients do not really co-operate better in treatment. They tend to be unco-operative, they often discharge themselves from treatment. We must face up to the fact that

sanatorium admission is not the same as sanatorium treatment. There has been a number of reports of studies made in sanatorium where spot checks of urine showed that some patients were not even taking their drugs. Patients are not necessarily co-operative even when they agree to remain in sanatorium.

Considering the risk to contacts I believe that it is only by controlled studies, such as those we are conducting in Madras, that is possible to evaluate the risk to contacts, and we found conclusive evidence that the major risk to contacts arises from undiagnosed infectious cases of tuberculosis. If you see that the patients co-operate sufficiently in treatment to take their drugs regularly or reasonably reguarly, there is such a rapid reduction in infectivity that the short period of infectivity after diagnosis is very unimportant compared with the longer period of infectiousness before diagnosis, particularly in developing countries, where the period of infectiousness before diagnosis is often many, many months.

— *Courtesy : " Rural Health Digest "*

PRIMARY HEALTH CENTRE AND TUBERCULOSIS CONTROL

DR. V. HARIHARAN.

Tuberculosis will be our most important public health problem after malaria is eradicated in this country. Tuberculosis is an infectious disease, the commonest source of infection being the germ containing sputum coughed out by persons having active tuberculosis of the lungs. The commonest method by which healthy people become infected is to inhale these germs into their lungs from the atmosphere. The disease thus continues to spread from person to person. It is not necessarily the known cases of active tuberculosis that are the greatest sources of infection; the danger lies in the undiagnosed cases who do not know that they are unwittingly spreading the infections. The number of such cases is enormous in our country. Consequently there are ample chances of the spread of this to every one. Fortunately, the disease develops only in a few of those who are infected, as the body's defences are quite adequate to deal with invading germs. But under certain circumstances when the invading germs are in large numbers their virulence high and the individual has low resistance because of poor nutrition, young age, etc., the defences of the body may not be adequate to deal with the invader and consequently the disease results.

Unless the tuberculosis problem in any community can be defined in concrete terms, it would be difficult to plan preventive and curative services. The generally accepted indices for measuring tuberculosis in a country are:—

I. Infection rate measured by tuberculin allergy.

II. Morbidity rate (number of people actually suffering from the disease).

III. Mortality rate (number of people that die annually from tuberculosis).

Infection and Morbidity Rate

Extensive tuberculin surveys carried out in the country in connection with the B.C.G. Campaign have shown that the risk of infection by tuberculosis germs is ever present and widespread in the community. Fifteen per cent of the children from infancy to six years, 45 per cent of children in school (6 to 14 years) and 60 per cent of young adults (14 to 24 years) and 80 per cent of adults (over 25 years of age) have already become infected and show the reactions the germs have produced in the tissues. This clearly brings out the risk of infection to children in their most vulnerable period of life.

Surveys carried out by the Indian Council of Medical Research (1955–58) have shown that out of every 100 persons in the country two actually suffer from the disease as indicated by the X-rays. In terms of absolute numbers, this represents about five to six million people who are actually suffering from the disease. One-third of these, pass tuberculosis germs in the sputum they cough out. Another important finding of the ICMR is that the prevalence of tuberculosis in rural areas is of practically the same order as in urban areas.

Mortality Rate

It has been estimated that out of every 100,000 people, 200 die of tuberculosis every year in India. Roughly it could be estimated that about a million deaths occur per year from tuberculosis alone.

Tuberculosis Control

Considering the seriousness of situation prevailing in this country, a national plan for control of tuberculosis had been worked out, based on the advances made in curative and preventive measures against tuberculosis. The National Tuberculosis Control Programme envisages the setting up of District Tuberculosis Control Centres based in Tuberculosis

Clinics in the headquarters town of the district. In these clinics, specialist services for diagnosis, X-ray treatment, BCG vaccination, etc., will be established. The emphasis is in the District Tuberculosis Control Scheme will be on the community aspects of tuberculosis rather than on the medical care of the individual patient as was the case in the past.

This scheme will utilize all the public health personnel and institutions available in the district to the maximum. The institutions available in the districts are taluk headquarters hospital, Primary Health Centres (including the sub-centres and other Panchayat Union Council Maternity Centres), rural dispensaries, etc. All these institutions will play their role in bringing the tuberculosis services within the reach of the entire community.

Role of Primary Health Centres

The Primary Health Centres will be responsible for rendering preventive care and treatment to all the cases on a domiciliary basis, living in the area of the Primary Health Centre, which is expected to be in the region of about 800 cases of which one-third are expected to be "open" cases. A proportion of these cases will already be seeking advice and treatment at the Primary Health Centre or in a rural dispensary on their own initiative, because of such symptoms as persistent cough, unexplained fever of a long duration, loss of weight, pain in the chest, etc.

Diagnosis

Each Primary Health Centre under the District Tuberculosis Control Scheme will be provided with a microscope and laboratory facilities for examination of sputum. This is an inexpensive and practical method of detecting a case of tuberculosis under conditions existing in our country. Sub-centres will act as sputum collecting centres which will be

sent over peridically to the Primary Health Centre for examination and diagnosis. In this manner, most of the sputum positive cases which are the real danger to the community would be diagnosed on a regular basis.

Treatment

The objective in the Tuberculosis Control Programme should be the reduction in the number of infectious cases. The advances that have been made in the treatment of tuberculosis in the recent years make it possible to realize this objective. The minimum period of treatment that has been accepted as necessary for making an infectious tuberculosis case into non-infectious one is 12 months. By proper treatment it should be possible to render most of the infectious cases non-infectious and also to prevent non-infectious cases from becoming infectious.

In view of the large number of cases it becomes necessary to depend on self-administration of drugs, by the patients themselves under the instructions of the Medical Officer of the Primary Health Centre. The important implications of such treatment are :—

1. Ensuring adequate supply of drugs by the health services. This will be done by the District Tuberculosis Officer, under the scheme.

2. The regular in-take of drugs by the patients for the prescribed period.

As the emphasis is on self-administration of drugs for a minimum period of one year, effective supervision over the collection of drugs and its intake by the patients regularly will have to be done by the Medical Officer and para-medical staff in co-operation with other agencies like the Block Personnel, Gramasevaks, School Teachers, Panchayatdars, etc. The efficiency and success of the Control Programme based on the

Primary Health Centre and rural dispensaries will be measured ultimately by the number of persons who have completed the recommended minimum treatment regiment and not by the number detected.

BCG Vaccination

BCG Vaccination has been in progress in India since 1948 and most of the States have completed one round of vaccination and now the second round is in progress. BCG has been accepted to be the safest and cheapest method of vaccination covering large population groups particularly in developing and under-developed countries.

A BCG team, consisting of one BCG team leader and six BCG technicians, will be attached to the District T.B. Control Centre.

This BCG Team is expected to cover intensively the entire District, Block by Block with a view to achieve maximum coverage of vulnerable population particularly in the younger age-group from one to 16 years. The staff of the Primary Health Centre will extend to the BCG Team when they are operating in the Block their maximum co-operation in making the Campaign a success.

Health Education with regard to the safety, cheapness and efficacy of BCG Vaccination will have to be carried out on an intensive scale by the Medical Officer and his staff in the School, in Panchayat Union Council meetings and in Panchayat meetings.

Examinations

Referral of cases for diagnosis will be made by the Medical Officer to the District Headquarters clinic or to the Mobile X-ray Unit when this is in operation.

Responsibilities of Medical Staff

Medical Officer.—As soon as the diagnosis of tuberculosis is made and a decision on the line of treatment taken, primary motivation of the patient in regard to (*a*) regular self-administration of prescribed drugs, and (*b*) need for the methods of prevention of spread of infection to members of the family, must be done by the Medical Officer. He will also periodically make house visits specially to those patients who are not regular in taking their drugs and to the " open " cases to ascertain whether the patient is following the advice given regarding the prevention of disease and its treatment. These occasional home visits will provide an opportunity the Medical Officer to study the background of the family and their conditions of living. He will also advise the head of the family to bring the contacts, particularly children under 15 years, for examination at the Primary Health Centre, specially if they have certain symptoms referrable to the lungs.

Health Visitor.—Secondary motivation of the patient will be done by the Health Visitor at the Primary Health Centre as also in the follow-up visits to the home of registered cases.

She will advise the patient to observe principle of personal hygiene and isolation, so that the disease may not spread to the other members of the family and the community.

She will educate the patient to be regular with the intake of drugs for the prescribed period. She can unobstrusively check what is left of the last supply of drugs.

It will be her duty to get the child contacts BCG vaccinated.

She will also collect sputum smears from symptomatic cases during her visits to villages and sub-centres and during visits to Pre-natal clinics at the main and sub-centres.

Health Inspector.—He will assist the BCG team during the planning and operational stages of the campaign in the Block. He will enlist the co-operation of the official and non-offical agencies for a sucecssful BCG Campaign.

He will educate the public about the preventive aspects of tuberculosis during his visits to the villages and check drug defaulters and bring them to the Primary Health Centre for care and advice.

He will also collect sides from Rural dispensaries and sub-centres for processing and examination at the Primary Health Centre during his rounds.

Maternity Assistant.—She will check drug defaulting during her visits and prepare sputum smears from symptomatic cases and send them to the Primary Health Centre for further examination.

Health Education

The Community should be educated about the basic facts of tuberculosis that—

* Tuberculosis is caused by tubercle bacillus.

* Tuberculosis spreads from a person suffering from the disease to another living or working in close contact with him.

* Tuberculosis occurs primarily as a family epidemic by close prolonged contact, and so control starts in the family.

* Children are very susceptible to tuberculosis and that serious complications and even death may occur in children infected with TB.

* Tuberculosis is no respecter of age, sex, race, social or economic status.

* Tuberculosis is a chronic disease without symptoms in its early stages and that vigilance is necessary to detect it.

* The damage caused by Tuberculosis can be controlled and even reversed when the disease is found in its early stages.

* Modern treatment at home with effective drugs for the prescribed period can completely cure the patient.

It is not enough if the people know certain facts about tuberculosis. We are concerned not with knowledge but with action. So proper motivation of the individual and through him the community is necessary if desirable action should result from knowledge. The approach in health education in tuberculosis is to help the individual understand the problems of tuberculosis in relationship to himself, his family and his community and to encourage him to take voluntary action to conquer the disease. The staff of Primary Health Centre must realize that the education of the family as a support for the education of the patient is of fundamental importance

PREVENTION OF FOOD ADULTERATION

The Director of Public Health has approached the State Government for the help of the Police Department in enforcing the Prevention of Food Adulteration Act. If the Police offers its unstinted co-operation to Food Inspectors, a large number of food offenders could be brought to book and trade in adulterated articles in the city could be successfully put down.

Most of the hawkers and street vendors of food articles, now avoid giving their names and addresses or those of their employers to the Food Inspectors. This stands in the way of the Inspectors taking samples from them and later prosecuting them for offences under the Act.

THE ROLE OF 'WHO' IN THE FIGHT AGAINST TUBERCULOSIS IN DEVELOPING COUNTRIES

DR. K. L. HITZE,

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At least 15 million people suffer from infectious tuberculosis in the world to-day. They represent a source of infection from which the disease maintains itself from geneforms of generation. Another 60 million suffer from other forms of tuberculosis, and of these, 2 to 3 million are added to the pool of infectious cases every year. It is furthermore estimated that tuberculosis claims 2 million lives annually.

Although varying enormously from the large underprivileged areas of the world, where up to 70 per cent of children are already infected at the age of 14, to the economically more favoured countries, of which a few are close to eliminating tuberculosis as a public health problem, tuberculosis is of serious concern to all. It constitutes a global problem, and vigilance must not be relaxed anywhere.

During the first four to six years of WHO's assistance in tuberculosis control, emphasis was given to national BCG campaigns. Mass BCG vaccination was considered the only nationally applicable control method which could be organized reasonably quickly within the limited economic and man-power resources of the under-privileged countries. To date, approximately 400 million people in 61 countries and territories have been tuberculin tested, and of these approximately 150 million have been BCG-vaccinated, with the assistance of WHO and UNICEF. To evaluate the achievements as well as the shortcomings, WHO has given assistance to BCG assessment projects in many countries and is continuing to do so.

The next step towards putting additional control measures to work was the establishment of Tuberculosis Training and Demonstration Centres, with WHO's technical assistance. However, it was found that it was difficult to expand the activities of those centres over large areas. One of the reasons was that a well-defined plan for systematic control work through the public health approach was often lacking. Moreover, there was no precise knowledge of the prevalence and distribution of tuberculosis that would allow for evaluating the impact of control measures on the whole community.

The immediate answer to these shortcomings was found in national prevalence surveys, 30 of which have been assisted by World Health Organization mainly in the African and Eastern Mediterranean Regions. Other countries, such as India and Japan, conducted their own national sample surveys.

However, the considerable amount of epidemiological information collected by using uniform methods and techniques did not bring about a " break-through " to efficient tuberculosis control programmes, although the advent of inexpensive oral chemotherapy with relatively low toxicity had brought ambulatory treatment of tuberculosis patients within reach. It became clear, therefore, that further World Health Organisation assistance should aim at finding methods for applying the accumulated amount of teachnical knowledge in the most efficient way. To this effect the concept of pilot area projects was developed. It constitutes a " laboratory " in which the methodology of a national tuberculosis control programme is developed under given conditions. The objective of national tuberculosis programmes which World Health Organization is now assisting and promoting is the control of tuberculosis by gradual reduction of the number of infectious and infected cases—in the context of, and in consonance with, the process of development of the country as a whole.

Such pilot area projects within the framework of national tuberculosis programmes have already been established in a number of countries. In South East Asia, for example, pilot area projects in Thailand, Indonesia and India are successfully contributing to the implementation and expansion of national tuberculosis control programmes. The purpose of these pilot area projects is to formulate the plan of action for nationally applicable tuberculosis control programme, based on an analysis of key variables in epidemiological, medical, operational and socio-economic factors. Efficiency forecasts are made on the basis of test runs. These test runs will pose new problems which need investigation, but they will also provide the experience required for country-wide expansion and training of the personnel for a national programme.

Besides such "operations" research, World Health Organization is giving assistance to other kind of reasearch in the field of tuberculosis. In India, for example, together with the Indian Council for Medical Research (ICMR) and the British Medical Research Council (BMRC), World Health Organization is operating the Tuberculosis Chemotherapy Centre at Madras. This project is designed to investigate problems connected with the clinical efficiency and applicability of ambulatory tuberculosis chemotherapy among populations living in adverse socio-economic conditions. The first basic finding at Madras was that one year's well-supervised ambulatory chemotherapy is as effective as one year's hospital treatment with the same treatment regimen, and that it does not expose the patient's contacts to any special risk. A considerable number of chemotherapeutic trials have greatly contributed to our present knowledge of the cheapest possible, yet efficient and non-toxic regimens, and have given special attention also to the problem of resistance to drugs as a consequence of inadequate co-operation on the part of patients. Directly supervised, intermittent chemotherapy is considered to go a long way towards improving this situation, and a com-

plete series of investigations to determine patients' response to various frequencies of administration of both first and second-line drugs is now under way.

World Health Organization assisted reserch also includes studies on the simultaneous application of BCG and smallpox vaccination as well as on the various aspects of so called indiscriminate, or direct, BCG vaccination, and on the influence of urbanization on the spread of tuberculosis.

Another kind of tuberculosis research assisted and promoted by World Health Organization is the standardization and simplification of products and techniques, e.g., the production of a standard tuberculin, the preparation of suitable culture media in simple laboratories under difficult conditions, the development of standard methods for the classification of mycobacteria and quantitative methods for the classification of mycobacteria and quantitative methods for the determination of drug resistance and internationally recognized minimum requirements for BCG vaccines.

World Health Organization's work in the filed of tuberculosis takes many different forms and varies from service projects of very different scope and extent to high-quality research, which often becomes a permanent feature in national research programmes. In other instances, World Health Organization acts as a world-wide co-ordinating agency which recommends technical problems for investigation, to be carried out on a contractual basis by a large number of existing research institutes and laboratories, frequently with the financial support of World Health Organization. More than published by World Health Organization during the last five years.

Among other world wide activities of World Health Organization is the granting of fellowships to qualified tuberculosis control officers and research personnel from all

over the world and participation in the organization of conferences and seminars on tuberculosis. Recently, the organization has sent fellows from South East Asia to the Training Course in Tuberculosis held twice yearly in Prague, and a few also to Rome, where a similar course is held in the French language.

In many of the abovementioned activities, World Health Organization has been in close partnership with the United Nation's Fund (UNICEF), which gives important material assistance to the activities recommended by World Health Organization. Another important partner in the world wide fight against tuberculosis is the International Union against Tuberculosis (IUAT) which encourages national tuberculosis associations to support Governmental efforts in particular by assisting in the organization of anti-tuberculosis treatment for patients cared for at home, by helping with the examination of family contacts and by undertaking health education campaigns in close liaison with national authorities.

PROGRESS OF B.C.G. VACCINATION IN MADRAS STATE

Dr. V. KAPALI,
Health Officer, Health Unit, Poonamalle

"This is excellent work. It is far better to adopt preventive measures than to wait till the disease has started. I hope the people will give their co-operation to this campaign which is for their benefit."

JAWAHARLAL NEHRU

B.C.G. Vaccination for Tuberculosis Control

Tuberculosis Sub-Committee of the Indian Council of Medical Research, after its *National TUBERCULOSIS SURVEY*, has summarised its findings as follows :—

(*a*) *Prevalence rates* :—

(i) For "active" and "probably active" Tuberculosis :—From 13 to 25 per 1000 population.

(ii) For "Bacteriologically confirmed cases" :—2 to 8 per 1000 population.

(*b*) *Geographical variation* :—the difference in the prevalence of Tuberculosis in cities, towns and villages were not marked

(*c*) Age and sex variation :—

(i) Prevalence among females is half of what it is in males (especially about 35 years of age)

(ii) Prevalence rates increase with age.

(*d*) The total number of cases of pulmonary Tuberculosis in the whole country may be 3·6 to 6·8 million. Of these 33 per cent will be bacteriologically positive on testing a single sample of sputum

It is further estimated that nearly one hundred crore "mandays" are lost to our nation due to this scourge.

Thus, this disease, *Tuberculosis* caused by the "Tubercle Bacilli" is a major community health problem, requiring the connected effort of the community, its physicians and the Government at various levels, local, national, international, etc., for its control and ultimate eradication.

Of the 3 cardinal principles of control of this disease protection through BCG Vaccination is one; the other two being case-finding and case-holding cum supervised treatment.

B.C.G. Vaccine

BCG Vaccine was developed by two French Scientists Dr. Calmette and Dr. Guerin in 1921 (after 13 years of patient research).

Since its discovery, the vaccination was becoming more and more popular.

In 1928 the effect of BCG Vaccine was examined by the league of nations. After careful research, the Bacteriological Commission of the league agreed unanimously that BCG was a *harmless* vaccine. The Clinical Commission reported that BCG vaccination produced a certain degree of immunity, against T.B.

More recently Dr. Storm conducted certain investigations with "Labelled Bacilli". He grew BCG in the presence of 'P32'—the radio active phosphorous. That permits him to trace the travels of BCG bacilli and their dispersion in the organs of the animal host.

Dr. Storm found out that virulent Tubercle Bacilli injected into an animal which has previously been vaccinated do not become distributed as rapidly and as widely in the organs of

the host, as do the same bacilli into a normal non-vaccinated animal. This is the definite proof that BCG Vaccination does minimise, does retard the spread of the bacilli from the point of injection.

Dr. Storm also found that within 1 to 2 hours a much larger amount of 'P32' was being excreted in the urine of the animal that had been vaccinated. Since most certainly the P32 has been released from the body of the bacilli, this is the most compelling evidence in fact, absolute evidence—that the vaccinated animal has the capacity to destroy within an hour after infection many of the bacilli of super-infection.

Dr. Storm says that "The results of these investigations are perfection arguments in favour of the effectiveness of BCG vaccination, that is, a BCG vaccination produces a specific immunity that increases the resistance to any virulent tuberculous infection". In other words when people are vaccinated with BCG, they are better protected against tuberculosis—than non-vaccinated persons.

B.C.G. Vaccination in India

BCG Vaccination is now in use in almost all countries of the world. It is compulsory in a number of countries, (e.g) France, USSR . Nearly 400 million people in the world have been Tuberculin tested, and of these approximately 150 million have been vaccinated (up to 1963) in World Health Organisation—UNICEF assisted BCG Vaccination programme is 61 countries of the world.

BCG Vaccine is now manufactured in specially selected laboratories of the world and one such laboratory is at Guindy, near Madras. This supplies the vaccine demands of India, Pakistan, Burma, Ceylon, Malasia, etc.

The BCG Vaccination Campaign in India—a joint venture of World Health Organisation and UNICEF with the Government of India—was inaugurated in 1949. Till 1951, the BCG

Vaccination was done on selective groups like school pupils, factory workers, refugee camps. From 1951 the Campaign was launched on a Mass scale so that a wide spectrum of population can get its benefit. In Madras the Mass BCG Vaccination Campaign was inaugurated on 14th November, 1951 to coincide with the birth date of our beloved Leader Sri Jawaharlal Nehru.

During the 1st phase of the campaign in Madras State the Municipal towns of the State were covered.

During the 2nd phase of the campaign the rural parts of the State were covered. All the villages in this State (except in Chingleput district where only a few villages had been so far taken) were covered during this phase.

During its 3rd phase the Mass BCG Vaccination has revisited many of the district, namely: Kanyakumari, Coimbatore, Nilrigis, Salem, North Arcot, South Arcot, Thanjavur and Tiruchirappalli.

The Campaign is now being reorganised to fit itself as a component of the district T.B. control organisation. So far, four Districts in our State are operating the District T.B. Control Programme. These districts are North Arcot, Thanjavur, Nigiris and Madras.

The following Table gives the progress of the Mass BCG Vaccination Campaign from 14th November 1954 in Madras State :—

Phase of Campaign. (1)	*Total Tuberculin tested.* (2)	*Total BCG Vaccinated.* (3)
I. During Phase I— Municipal Towns	1,051,092	373,111
II. During Phase II— Rural parts of our State ..	34,458,841	10,721,561

Place of Campaign.	*Total Tuberculosis tested.*	*Total BCG Vaccinated.*
(1)	(2)	(3)
III. During Phase III.—		
i.e. During the revisit to the Towns and Villages in the Districts.		
Kanyakumari	149,219	58,877
Madurai Municipality ..	100,764	18,222
Salem District	802,720	194,656
Coimbatore District	701,493	206,168
South Arcot District	701,493	206,168
Thanjavur	575,131	187,316
Total ..	3,030,820	871,407

The Tuberculin Survey conducted as a preliminary step to BCG vaccination shows the infection rate due to Tubercle Bacilli. The Table gives the infection rate in certain areas of our State :

Age group.	*Rural.*	*A Small coastal town.*	*A big city.*
1-6	11	17	21.6
7–14	19	33	45.06
15–24	60	58	78.90
25–50	75	86	93.81

World Health Organisation expert committee on T.B. has laid down a criterion by which a country could judge its progress towards the conquest of T.B. That criterion says that T.B. could not be considered to be eliminated as a Public Health problem, unless the number of children who become infected before the age of 14 fell below one per cent. We see that by the time a child in our state attains 15th year, that child has 20 to 45 per cent chances of getting infected with virulent Tubercle Bacilli.

If BCG Vaccination is fully to serve its purpose, it must be given to a high proportion of young people before they are exposed to any serious risk of infection.

So infant BCG Vaccination and childhood vaccination with BCG is to be strongly advocated in our country, based on the knowledge of the prevalence of this disease in our country. It is up to every parent and health worker to make the benefit of BCG vaccination available to the infants and young children.

NOBODY IS SAFE FROM TUBERCULOSIS UNTIL EVERYBODY IS SAFE

[A NUMBER OF INTERNATIONAL ORGANIZATIONS ARE WORKING WITH THE GOVERNMENTS AND THE PEOPLES OF ARE WORLD TOWARDS A COMMON GOAL: THE MASTERY OF TUBERCULOSIS.]

Tuberculosis is an international health problem and must be solved on a world-wide basis. Although varying enormously from the large under-privileged areas of the world to the highly industrialized countries, the tuberculosis situation is of serious concern to all. Even those few countries which are gradually eliminating the problem within their own frontiers cannot hope to be safe as long as tuberculosis is rampant elsewhere. The increasing rapidity and volume of international transport, the migration of workers across national boundaries tend to intensify the risk of infection. Another cause for worry is that as tuberculosis becomes less frequent in a country the natural resistance of the population may be expected—gradually to diminish, and this at a time when the anti-tuberculosis services are likely to relax their vigilance. Tuberculosis must be conquered everywhere.

International Partnership

Since its start in 1948, the World Health Organization (WHO) has assisted national governments in bringing tuberculosis under control by providing expert advice and teams of specialized personnel.

Under its guidance, mass vaccination with BCG, the first weapon against tuberculosis, has been extended to most parts of the world. However the very first large-scale vaccination campaigns were launched by the "International Tuberculosis Campaign" which was set up after World

War II by the Scandinavian countries in favour of those countries which had been most seriously ravaged by the disease.

When in more recent years, effective anti-tuberculosis drugs became available the rational use of this powerful weapon in the many countries where hospital facilities are limited or non-existent was investigated through special projects It is clear that none of the weapons against tuberculosis can be used in exactly the same way in every country. Conditions and resources differ and different strategies have therefore to be developed. To meet this need World Health Organisation has co-operated in pilot projects for tuberculosis control in numerous countries.

In all of these activities the United Nations Children's Fund (UNICEF) has been a partner of WHO. With the joint assistance of WHO and UNICEF more than 150 million people have been vaccinated in campaign in 61 countries, tuberculosis control training centres have been set up in many parts of the world and more recently pilot projects in tuberculosis control for about a third of the world's population have been started.

Another important partner in the world-wide fight against tuberculosis is the International Union against Tuberculosis (IUT). A frequent obstacle to the efforts made by Governments to control tuberculosis is a lack of sustained co-operation by individuals and by communities. It is here that the IUT and its constituent voluntary tuberculosis associations can play a decisive part : What Governments cannot do, national, regional and local associations often can. The Mutual Assistance Programme of the IUT has been designed specifically to supplement the governments' efforts by mobilizing sustained popular support.

A NEW ERA IN THE TREATMENT OF TUBERCULOSIS

[*The advent of three new drugs, streptomycin, PAS, and Isoniazid, opens fresh horizons for Tuberculosis workers in all countries.*]

Carlo Forlanini, a surgeon from Pavia—staggered by the ravages of tuberculosis on lung tissues and dreamed of finding a way to heal cavities in the lung. The damaged lung, he decided, had to rest in a last desperate attempt to save a young workman, he inserted a hallow needle between his ribs until the point entered the space between the lung and the rib cage. Then he introduced a litre of nitrogen into the space. The ailing lung collapsed under the pressure. The patient died. But a second attempt was successful and this time the patient lived. Thus not long after Koch's great discovery in 1882, the procedure known as " pneumothorax was born, and this in turn, led to the refined surgical techniques of to-day.

However, the real break-through in the battle against tuberculosis was the discovery of anti-tuberculosis drugs with the direct action against the bacillus. The three most important of these are streptomycin, paminosalicylic acid (PAS), and isonicotinic acid hydrazide (isonizid).

Streptomycin was discovered in 1944 by the American scientist Selman A. Waksman and his associates. Like penicillin, it is extracted from a mould (Streptomyces griseus).

The power of PAS to halt the growth of the tubercle bacillus was discovered by Jorgen Lehmann in 1946.

Isoniazid (popularly known as " INH " since it was first developed in 1951, has been well known for its exceptional efficacy and low toxicity. In addition, this remarkable drug has the advantage of being cheap; one year of domiciliary treatment with it costs only about two US dollars.

How can these powerful drugs be used to best advantage in the developing countries? By hospitalizing the favoured few for whom beds would be available, so that their drugs intake could be fully supervised? Or by supplying drugs to many more infectious patients, for domiciliary or ambulatory administration?

For and against hospitalization

At a recent discussion held by the International Union against Tuberculosis, six experts debated, *inter alia* the following question : " Is hospitalization still useful? "

" I know from experience," said one of them " that each time I have allowed a patient to be treated at home, I have always, without exception, had occasion to regret it—they did not keep to the treatment, they went out despite my having told them not to, they stopped asking their drugs when they should not have. In practice, is difficult to carry out treatment at home."

Another expert was of a different opinion :

" One of the really essential tasks now is to educate the politicians and then the general public to the fact that tuberculosis can be cured at home if the patient takes his drugs for a long enough period of time. If we could only teach the authorities that their job is now to provide hospital beds and magnificient clinics and have grand opening ceremonies, at which their name is unveiled on a stone, but their real responsibility is to see that there are enough drugs and then to

get the patients to come forward and take those drugs for a sufficiently long period, then I am convinced that something can be done about tuberculosis."

Obviously institutional facilities should be used to the full wherever they exist, but many experts seriously doubt the feasibility of this approach in developing countries where the ratio between hospital beds and new cases of tuberculosis is usually 1 : 50 or less, whereas it is known that the ratio should be at least 1 : 2 if tuberculosis is to be controlled by hospital treatment alone.

An inexpensive cure

In order to bridge the vast gap between the available knowledge of tuberculosis treatment and the practical application of this knowledge vast trials are now being carried out to find ways of using these powerful drugs to the best advantage, that is, not for the benefit of a few privileged individuals only, but for the community as a whole, in any part of the world.

In Madras, India, since January 1956, a Chemo therapay Research Centre has been operating under the auspices of the Indian Government, the State of Madras, the British Medical Research Council, and World Health Organisation. Its aim is to study the efficacy of the domiciliary drug treatment of tuberculosis among populations living in a particularly adverse economic and hygienic environment.

One group of very ill patients with far advanced disease and living under bad nutritional and hygienic conditions was given supervised treatment in a hospital—with all its dietary and hygienic advantages—and another similar group received treatment in their " homes "—where they continued their usual habits of diet and work. It was established that over 90 per cent of apparently desperate cases could be saved

by the administration of pills costing only a few dollars a year ! Moreover, the risks to the patients household contacts were no greater than those incurred by the contacts of patients treated in hospital !

There can thus be no doubt about the striking efficacy of the new drugs, even under the worst socio-economic circumstances, and that the extension of this treatment to all the 15 million sufferers from tuberculosis throughout the world is now possible at relatively low cost.

PUBLICITY MATERIALS ON T.B. AVAILABLE IN MADRAS STATE HEALTH EDUCATION BUREAU

Posters.—

One set of poster contains 4 numbers.

Folders.—

(1) Consumption (English and Tamil).

(2) Tuberculosis (Tamil).

Films.—

A Brief synopsis of the films on T.B.

1. *Beat Tuberculosis (Tamil).*—In India, every year five hundred thousand; mostly young pepole die from T.B. But T.B. is curable if its early symptoms are read correctly and immediate steps are taken to combat them. Here is a practical demonstration showing how T.B. can be prevented and suitable measures to be taken in this respect.

2. *Eradicate the enemy* (Tamil and English).—This documentary is meant to popularise the B.C.G. vaccine to fight T.B. B.C.G. was developed by the French Scientists, Dr. Calmettee and Prof. Gueriu, after many years of research. It is an inexpensive speedy and effective method for prevention of T.B.

3. *Good Bye Mr. Germ (English).*—This presents the basic facts about T.B., largely by means of animated cartoons The Doctor is shown talking with the Germ, who is prevailed upon to tell the story of his life. The doctor tells the Germ of the modern way of fighting T.B.

4. *The inside Story* (English).—A demonstration, lecture on facts about T.B. given by a scientist—physician, to make his explanation graphic. The film tells us, what T.B. is, how it spreads, how it is treated and how it can be prevented.

5. *Rodney* (English).—An animated cartoon which interprets facts about T.B. including cause, spread, diagnosis, and treatment.

6. *This is T.B.* (English).—This film outlines the cause, the spread, the cure and prevention of Tuberculosis.

7. *Tuberculosis (Tamil and English)*.—Animated cartoon explains how T.B. affect lungs, how sick people infect weak people.

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MADRAS